

Evaluation of Student Accuracy and Changes in Confidence from a Simulated Drug Utilization Review Process

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INTRODUCTION

- Pharmacists should assess potential drug allergies, drug-drug interactions, and drug-disease interactions during a drug utilization review (DUR).¹
- Previous literature has evaluated pharmacists' confidence in performing medication reviews and their findings²⁻⁵; however, there are limited descriptions of how to successfully teach these skills to student pharmacists.^{6,7}
- Saverno et al. found student pharmacists were able to identify only ~61-65% of clinically significant drug-drug interactions.⁸
- Pharmacists have identified the following barriers in identifying and effectively addressing drug-drug interactions: lack of self-confidence, poor motivation, workload and pharmacy staffing.^{2,3}
- An investigational report published by the *Chicago Tribune* found that 52% of the time medications with potentially severe drug interactions were dispensed without any consultation of the patient regarding the risks.⁹ Following this report, the National Association of Boards of Pharmacy and U.S. Senator Dick Durbin (D-IL) have called for better detection of drug interactions.¹⁰

OBJECTIVES

- Assess the impact of a pharmacy skills lab on third-year student pharmacists' confidence in completion of a drug utilization review (DUR) during the dispensing process
- Assess student accuracy in identifying the therapeutic issue in each case.

METHODS

- A pharmacy skills-based lab simulated the DUR process in a community pharmacy setting for third-year pharmacy students.
- A 30-minute interactive lecture was provided to describe a systematic process for conducting a DUR prior to the exercise.
- Students had 90 minutes to complete 12 simulated DUR cases with 60 minutes for a faculty debrief over the therapeutic issues in each case and potential resolutions.
- A pre-survey and post-survey were developed via Qualtrics to assess changes in student confidence resulting from the lab activity. Case answers were collected electronically via Qualtrics.
- This study was approved by the ETSU IRB.
- Responses were anonymous, matched via self-generated code.
- Identification of therapeutic issues and decision to dispense are summarized using descriptive statistics and Wilcoxon signed rank tests were used to analyze matched pre- and post- data. Kruskal-Wallis tests were used to analyze implications of duration of pharmacy experience on initial confidence.

RESULTS

- The survey response rate was 96% (n=75) from a class of 78 third-year student pharmacists at East Tennessee State University.
- The majority of students had paid pharmacy experience in one or more positions as a pharmacy intern (51%), pharmacy technician (34%), and pharmacy clerk (13%).
- 60% of students had independent community pharmacy experience, 68% had chain community pharmacy experience, and 57% had hospital pharmacy experience.

Confidence Statement	Pre-Survey	Post-Survey	p-value	Impact of previous pharmacy experience p-value
I can accurately identify and resolve therapeutic issues when completing a drug utilization review on my own	41%	58%	0.0014	0.5404
I feel confident performing a drug utilization review as part of the dispensing process	45%	58%	0.0140	0.2845
I feel adequately trained to perform a drug utilization review as part of the dispensing process within a community pharmacy setting	40%	50%	0.0326	0.1527
I have a systematic process for approaching the drug utilization review process before dispensing a medication	31%	59%	< 0.0001	0.1294
I feel confident in my ability to evaluate the clinical significance of drug interactions	47%	56%	0.0333	0.0944
I feel confident in my ability to address drug interactions that I identify during the drug utilization review process	48%	63%	0.0087	0.1797

Case No.	Case Summary	Identified Therapeutic Issue	Intended to Dispense
1	Hydrochlorothiazide in Gout	46%	51%
2	Cipro for Dental Prophylaxis	26%	54%
3	CYP2D6 Interaction with Prolonged Use (2 years; metoprolol & paroxetine)	89%	50%
4	Birth Control and Anticonvulsant (Qsymia & Oral Contraceptive)	86%	83%
5	CYP3A4 Interaction with Boxed Warning (simvastatin & verapamil)	92%	37%
6	NSAID and ACE-I Interaction (prolonged daily NSAID)	58%	58%
7	NSAID and SSRI (prolonged daily NSAID)	83%	80%
8	Avelox for UTI	58%	15%
9	Acute CYP3A4 Interaction (clarithromycin & simvastatin)	87%	29%
10	AChEI inhibitor & Antimuscarinic (donepezil & oxybutynin)	34%	57%
11	Serotonin Syndrome Risk (tramadol, venlafaxine, buspirone)	82%	57%
12	Masking of hypoglycemia (beta-blocker and sulfonylurea)	55%	60%

- 64% of student pharmacists strongly agreed-agreed the simulated dispensing environment was an effective way to improve their confidence in performing a DUR.
- 70% of student pharmacists strongly agreed-agreed that hands-on activities and simulated experiences will better prepare them for pharmacy practice than didactic lectures alone.

CONCLUSION AND IMPLICATIONS

- A simulated DUR exercise increased student pharmacist confidence in their ability to identify and address therapeutic issues.
- Previously published data has shown this activity to be well-perceived by students, albeit with poor overall accuracy at identifying clinical issues during a DUR (55% accuracy).¹¹
- There was a wide variation in ability of student pharmacists to identify therapeutic issues. Despite increased confidence, this shows there is still opportunity for skill refinement.
- Recent investigational reports have shown a similar failure to identify and address clinical issues in community pharmacy practice in one geographical region.⁹
- While incorporation of this simulated exercise increased students' confidence in completing a foundational skill within community pharmacy practice, this skill must be revisited in additional didactic or experiential learning settings to ensure competence upon graduation and entering practice.

LIMITATIONS

- For this study, many limitations should be considered:
 - The survey tool utilized is not a validated survey.
 - The cases utilized in the simulation were developed from faculty members' experience and practice expertise, thus they may not represent the most common or most serious drug interactions encountered in community pharmacy.
 - The population studied is not robust, representing only one pharmacy graduating class from one institution.

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